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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,366	06/07/2001	Joseph Franklin Garvey	RAL920000123US1	9154

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EXAMINER

STEELMAN, MARY J

ART UNIT	PAPER NUMBER
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2122

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,366

Applicant(s)

GARVEY, JOSEPH FRANKLIN

Examiner

Mary J. Steelman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/7/01, 2/1/02, 11/11/02.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/7/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-22 are pending.

Information Disclosure Statement

2. IDS received 6/7/2001 has been considered.

Claim Objections

3. Claim 2 is objected to for minor typo errors. Line 2 recites, "identifying", should be—
identifying--, line 3 recites "identfied", should be --identified--, line 5 recites "identified", should
be --identified--.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

the claimed invention is directed to non-statutory subject matter.

5. Claims 1-8 are rejected under 35 U.S.C. 101 because they are directed to "a state
machine" which is a program per se, and thus is nonstatutory subject matter.

Nonstatutory Subject Matter

Claims to computer-related inventions that are clearly nonstatutory fall into the same
general categories as nonstatutory claims in other arts, namely natural phenomena such as
magnetism, and abstract ideas or laws of nature which constitute "descriptive material."

Abstract ideas, Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759, or the mere
manipulation of abstract ideas, Schrader, 22 F.3d at 292-93, 30 USPQ2d at 1457-58,

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are not patentable. Descriptive material can be characterized as either “functional descriptive material” or “nonfunctional descriptive material.” In this context, “functional descriptive material” consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of “data structure” is “a physical or logical relationship among data elements, designed to support specific data manipulation functions.” The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) “Nonfunctional descriptive material” includes but is not limited to music, literary works and a compilation or mere arrangement of data.

Both types of “descriptive material” are nonstatutory when claimed as descriptive material per se. Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and Warmerdam, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). When nonfunctional descriptive material is recorded on some computer-readable medium, it is not statutory since no requisite functionality is present to satisfy the practical application requirement.

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Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make it statutory. Such a result would exalt form over substance. In *re Sarkar*, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) (“[E]ach invention must be evaluated as claimed; yet semantogenic considerations preclude a determination based solely on words appearing in the claims. In the final analysis under 101, the claimed invention, as a whole, must be evaluated for what it is.”) (quoted with approval in *Abele*, 684 F.2d at 907, 214 USPQ at 687). See also *In re Johnson*, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) (“form of the claim is often an exercise in drafting”). Thus, nonstatutory music is not a computer component and it does not become statutory by merely recording it on a compact disk. Protection for this type of work is provided under the copyright law.

Claims to processes that do nothing more than solve mathematical problems or manipulate abstract ideas or concepts are more complex to analyze and are addressed below.

If the “acts” of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. *Schrader*, 22 F.3d at 294-95, 30 USPQ2d at 1458-59. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

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6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 4,099,230 to Mead.

Mead disclosed (Abstract) a method and means for implementing the control structure of a computer comprising...conditional execution, and nesting... Col. 2, lines 23-26, "...control system for a computer wherein a very small number of very high level control constructs (IF, ELSE, ELSEIF, etc.)are capable of providing the entire control structure of a very large system." Col. 2, line 34, "...programs and their labels are loaded...", Col. 2, lines 39-45, "When a label for a set of instructions, constituting a specific program segment, is detected, the label table is instructed to store, at the address represented by the label, the address of the particular program segment which is derived from the program counter...whenever it is desired to call out a new set of instructions, this is done by using the label as an address ..." Col. 2, lines 50-52, "Provision is made for conditional execution and branching as well as nesting, using labels in place of addresses." Conditional constructs direct execution to labels.

Mead disclosed, col. 3, lines 22-28, "A computer will contain...a program memory module for providing the program for instructing the data processing and a state machine

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controller. In accordance with this invention the state machine controller includes a program tracker circuit, and a micro program control circuit.”

Mead disclosed, col. 3, lines 32-49, “The program tracker circuit...comprises an arrangement for keeping track of locations within programs to which a return should be made after a branch has been executed, and also keeps track of nesting information whereby the proper return from a nested program segment through several successive layers of program segments to the authority program may be made.”

Mead disclosed, col. 5, lines 27-30, “A mechanism which enables the call of a procedure defined at any point in a program from any other point in a program is the label mechanism.”

Mead disclosed, col. 5, lines 46-50, “A structured program is by definition nothing more than a large set of procedures all being called from one another and being initiated from one master procedure which is called the main program.”

Per claims 1, 8, and 15:

A state machine for an assembler capable of processing structured assembly language, said state machine comprising:

-an IF state, an ELSE state, an END_IF state, an ELSE_IF and a SETUP_IF state;

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(Mead disclosed the IF and ENDIF instructions (col. 6, line 39-col. 7, line 4), the ELSE instruction (col. 7, lines 5-34), the ELSEIF instruction (col. 7, line 35-col. 8, line 31) and nesting (col. 9, lines 40-60). The state machine / micro program control capable of processing structured assembly language is disclosed at col. 14, lines 22-33, "During the run mode, when the program control sees an IF statement...the comparator compares...This condition is then written into the label stack memory...along with the label corresponding to the IF statement. This condition is used by the micro program control to determine whether or not the condition for a particular IF or ELSEIF statement has been successfully met.")

-means for transitioning from said IF state or said ELSE_IF state to said SETUP_IF state, in response to recognizing a SETUP_IF clause;

(Mead disclosed a mean for transitioning from one state to another, col. 14, lines 41- col. 15, line 20. Mead disclosed, col. 18, lines 46-52, "...at the end of the scan interval, because of the original organization of the program segments, the program which is stored in the program memory consists of a set of program segments each beginning with a label statement and a binary label and ending with a return instruction and consisting of executable code." Mead did not disclose a SETUP_IF clause / programming construct. However, this is merely another reserved term related to a label, created by the programmer, that the controller will recognize when running the code. Mead disclosed, col. 17, lines 65-67, "It is also clear that any other embodiment of a sequential state machine can be used to activate the microprogram sequencing.

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-means for transitioning from said SETUP_IF state to said ELSE_IF state, in response to recognizing an ELSE_IF clause.

As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 2, 9, and 16:

-state machine further includes a means for transitioning from said IF state to said ELSE state, in response to recognizing an ELSE clause.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the

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control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 3, 10, and 17:

-state machine further includes a means for transitioning from said IF state to said END_IF state, in response to recognizing an END_IF statement.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 4, 11, and 18:

-state machine further includes a means for transitioning from said IF state to said ELSE_IF state, in response to recognizing an ELSE_IF clause.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the

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purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 5, 12, and 19:

-state machine further includes a means for transitioning from said ELSE state to said END_IF state, in response to recognizing an END_IF statement.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 6, 13, and 20:

-state machine further includes a means for transitioning from said ELSE_IF state to said END_IF state, in response to recognizing an END_IF statement.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

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Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claims 7, 14, and 21:

-state machine further includes a means for transitioning from said ELSE_IF state to said ELSE state, in response to recognizing an ELSE clause.

(As noted above, the means for transitioning from one state to another is via the controller encountering a structured language term and referring to the label for executable code.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Per claim 22:

22. A data processing system comprising:

-means for identifying a SETUP_IF clause;

(Col. 2, lines 39-45, "When a label for a set of instructions, constituting a specific program segment, is detected, the label table is instructed to store, at the address represented by the label, the address of the particular program segment which is derived from the program counter... whenever it is desired to call out a new set of instructions, this is done by using the label as an address ..." Col. 2, lines 50-52, "Provision is made for conditional execution and branching as well as nesting, using labels in place of addresses." Labels are used to identify instructions for a control construct such as SET_UP. Although Mead did not disclose the SETUP_IF construct, it could be programmed by the developer. The conditional is stored when the program is scanned. A label relating to its executable code is created.)

-means for associating said identified SETUP_IF clause with an ELSE_IF clause having a test condition;

(Col. 11, lines 49-50, "If during the execution of one procedure, another procedure call is encountered, the process is repeated..." Col. 11, line 67 – col. 12, line 2, "...the processor automatically threads its way backwards from procedures nested (associated constructs) as deep as desired.)

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-means for inserting instructions from said identified SETUP_IF clause prior to the test condition of said ELSE_IF clause where said ELSE_IF clause logically follows a prior IF clause or a prior ELSE_IF clause.

(Inserted executable code for the construct SETUP_IF will be referenced in the label table. A test condition of ELSE_IF clause logically following a prior IF clause or a prior ELSE_IF clause could determine whether to execute such code. Mead disclosed, "...the labels can be detected as they are being transferred into the program memory (inserting instructions) ..." As noted above, the control process of a structured program can use various instructions (IF, ELSE, ELSE_IF, etc.) to direct the flow of execution depending on a condition.)

Therefore, it would have been obvious, to one of ordinary skill in the art, at the time of the invention, to have modified Mead's invention to include a SETUP_IF construct for the purpose of directing control flow, because it merely is a name that references executable code, as written by a programmer, for the purpose of logically organizing a program. Whatever the control construct is named, depending on the result of the comparison, it references the label table to find related code.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (703) 305-4564. The examiner can normally be reached Monday through Thursday, from 7:00 A.M. to 5:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on (703) 305-4552.

The fax phone number is (703) 872-9306 for regular communications and (703) 746-7239 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Mary Steelman



07/07/2004



TUAN DAM
SUPERVISORY PATENT EXAMINER